

**REMARKS**

Claims 1-10 are pending in this application. By this Amendment, claims 1 and 6 are amended to more clearly define the claimed invention.

No new matter has been added by this Amendment. Support for the language added to claims 1 and 6 can be found in the original specification. In particular, support for the language added to claims 1 and 6 can be found on page 2, paragraph 8 of the specification.

**I. Rejection in View of Iwai**

Claims 1-10 were rejected under 35 U.S.C. §102(a)/(e) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly obvious over U.S. Patent No. 6,579,490 ("Iwai"). This rejection is respectfully traversed.

Iwai does not teach or disclose all of the features of the invention as recited in claims 1 and 6. In particular, Iwai does not disclose to "generate and propagate a given vibration originated from a transverse wave into said melted metal." According to the invention as recited in claims 1 and 6, it is required to propagate a vibration originated from a transverse wave, so that both the static magnetic field and a given wave originate from an AC electric field.

However, in the invention as disclosed by Iwai, only a compression wave is generated in the conductive fluid, solely by means of the AC magnetic field from the electromagnetic coil installed around the vessel to contain the conductive fluid. See, for example, Fig. 1 and column 4, line 53 to column 5, line 64 of Iwai. In other words, Iwai does not intend to generate such a vibration originated from the transverse wave as defined in the recited claims 1 and 6. Thus, according to Iwai, a static magnetic field is not required, and the use of a static magnetic field is not taught or suggested.

Further, the relation of  $2/(L^2\pi\mu\sigma) \leq f \leq (c^2\sigma\mu)/2\pi$  as disclosed in Iwai is different from the relations of  $l_{\perp} > \delta$  and  $\lambda_{\parallel} > \delta$  as recited in claims 1 and 6. Thus, Iwai can not derive the same relations as the relations recited in the present invention.

Therefore, as Iwai does not disclose all of the features recited in claims 1 and 6, Applicants submit that claims 1-10 are allowable. Thus, reconsideration and withdrawal of this rejection are respectfully requested.

## **II. Rejection in View of Rummel**

Claims 1-10 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly obvious over U.S. Patent No. 4,244,796 ("Rummel"). This rejection is respectfully traversed.

Similar to Iwai, Rummel does not does not disclose to "generate and propagate a given vibration originated from a transverse wave into said melted metal," as recited in claims 1 and 6 of the present invention. Further, Rummel does not refer to the propagation of a vibration in a conductive fluid, regardless of the vibration originating from a compression wave or a transverse wave.

Therefore, as Rummel does not disclose all of the features recited in claims 1 and 6, Applicants submit that claims 1-10 are allowable. Thus, reconsideration and withdrawal of this rejection are respectfully requested.

## **III. Rejection in View of Kawai**

Claims 1-10 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly obvious over Kawai et al., Materials Transactions, Vol. 42, No.2 ("Kawai"). This rejection is respectfully traversed.

Again, Kawai does not disclose to "generate and propagate a given vibration originated from a transverse wave into said melted metal," as recited in claims 1 and 6 of the present invention. Kawai discloses a compression wave that is generated in the conductive fluid by

means of a static magnetic field and an AC current. Thus, Kawai does not disclose or suggest the relations of  $l_{\perp} > \delta$  and  $\lambda_{\parallel} > \delta$  as recited in claims 1 and 6. Accordingly, the vibration originated from a transverse wave as recited in claims 1 and 6 cannot be generated or propagated by the invention as disclosed by Kawai.

Therefore, as Kawai does not disclose all of the features recited in claims 1 and 6, Applicants submit that claims 1-10 are allowable. Thus, reconsideration and withdrawal of this rejection are respectfully requested.

#### IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-10 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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